

is, its value is always in proportion to the degree to which evidence has been previously elaborated by laborious descriptions and comparative figures. The author's mental attitude rather disposes him to write for those who have already written on similar subjects, than for the many who might become students. But even in this he has impressed his own individuality on his work in his own way, and we take that work with much gratitude for the labour, ability, and research which it manifests.

*Memoirs of the Geological Survey of India. Palæontologia Indica, being Figures and Descriptions of the Organic Remains procured during the progress of the Geological Survey of India.* Published by order of His Excellency the Governor-General of India in Council. Series iv. Vol. I. Part 4. *The Labyrinthodont from the Bijori Group.* By R. LYDEKKER, B.A., F.G.S., F.Z.S. With 4 plates. Calcutta : Geological Survey Office. London : Trübner & Co. 1885.

THE Labyrinthodont which gives a title to this memoir is a new generic type named by the author *Gondwanosaurus bijoriensis*. The name is taken from the geological series, Gondwana system, in which it occurs, and the Bijori group, an upper subdivision of the same series in the Satpura district. The preservation is not all that could be desired, the bones having disappeared from the exposed portions of the specimen. The skull is about the size of that of the well-known *Loxomma Allmanni*, and is shown to be labyrinthodont by the structure of the teeth, a parietal foramen, the presence of epiotic cornua, and the structure of the thoracic shield. Only in the region of the epiotic bones is there a trace of external surface, and there the ornament is closely pitted. The exoccipital region appears to show no trace of the characteristic amphibian exoccipital condyles, a character not without importance in determining the classificatory position of this animal and its allies. The author relies mainly upon the figures to convey a conception of the form, proportions, and structure of the skull, and the relations of its several elements. The outline was triangular, with a rounded muzzle, the length to the breadth being as two to three. The orbits are oval, separated by the diameter of an orbit, and are in the posterior half of the cranium. The parietal foramen is just behind the eyes. An oval plate, which has the aspect of a perforation in the cranial bone, occurs on each side of the foramen. The author regards this as a bony pedicle ; but having only the figure to judge from, it appears to us to be an indication of minute temporal fossa, and if so is not entirely without interest as bearing upon the affinities of the group. In the pre-orbital region there is on one side a slight depression, thought to indicate a small lyra. The nares appear to have been near the extremity of the snout. On the palatal aspect there is a similar absence of bony elements ; but a

large median element is determined as parasphenoid, on each side of which are bones that appear to be pterygoids. The vomer and palatine are regarded as forming the arrow-head-shaped anterior exposed part of the palate. The mandible is long, straight, and diminishes in depth anteriorly from the condyle. An oval mandibular foramen is described on the middle of the under surface of the jaw. The teeth are imperfect. One or two palato-vomerine teeth remain, and the maxilla and dentary part of the mandible each carry a row of small, close-set, sharp, subcylindrical teeth, which extend back to the orbits. The dentine is simply plicated. Some larger teeth appear to have been placed behind the palatal teeth. The vertebral column is only known from an imperfect cast. The notochord is represented by a large cylinder, somewhat constricted in the middle of each centrum; the intervertebral foramina appear from the figure to have been exceptionally long. The author finds that each vertebra consisted of a bony neural arch, from which a bony plate descended on each side and joined the median ventral portion, and he sees in this structure an analogue of the vertebræ of *Archegosaurus* and *Euchirosaurus*. Each centrum is supposed to support parts of two neural arches. There are impressions of fifteen ribs, which have the usual expanded extremities and double head. The thoracic shield is well preserved, though the central plate is imperfect posteriorly. It is ornamented with radiating sculpture, most developed in front. It has the usual long rhomboidal form. The lateral plates overlap the anterior part of the median plate and terminate posteriorly in a sharp process, beyond which another small shield is found. The dermal scutes appear to have had the form of oats, and were arranged in oblique rows, forming a chevron pattern, with the angle forward, along the length of the specimen. The notochordal character of the vertebral column, with minor ossifications in the centrum, and the simply plicate dentine distinguish this type from all the large labyrinthodonts except *Archegosaurus*; and it differs from that genus in the breadth of the interorbital space, development of the epiotic cornua, in wanting a post-articular process of the mandible, which, on the other hand, has an internal articular buttress; and it further differs in having the rami of the mandible ankylosed, in having large palato-vomerine teeth, with a few mandibular tusks forming an inner series near the symphysis, and in having the summits of the neural spines expanded from front to back and transversely. The author is disposed to refer the genus to the Archegosauridæ, and it is supposed to be a more specialized type than *Archegosaurus*, and of aquatic habit; its geological age is probably Permian.

The memoir concludes with a list of writings on Labyrinthodonts published since 1874. It is an excellent monograph, elaborated in the author's best manner.